

**METHOD FOR USING INTERNET ACCESS NETWORKS WITH MOBILE,
INTERNET-COMPATIBLE COMMUNICATION TERMINAL DEVICES**

The Internet communication network represents a global overlay communication network wherein the Internet access networks or, respectively, the 5 Internet servers are connected via public and private communication networks. Access to the Internet ensues mainly via the subscriber line areas or, respectively, feeder networks of public or private communication fixed networks -- for example the telephone network of the ISDN communication network. Alternatively, access is provided via communication radio networks -- for example, the public mobile 10 radiotelephone network or a wireless network working according to the DECT or CDMA transmission method. Since the Internet access networks or, respectively, Internet servers are regionally or super-regionally operated, the respective Internet user or, respectively, the user's Internet communication terminal device must be 15 logged on at the respective Internet server or, respectively, Internet operator. This registration is required for a charge registration for Internet services. This means that the respective Internet access networks can only be used by the logged-on or, respectively, registered Internet users or, respectively, their communication terminal devices in the respective region or can only be reached via expensive, narrowband connections via the worldwide telephone network.

20 Further, a mobile Internet protocol is being currently designed for Internet users wherein mobile Internet communication terminal devices are allowed to have worldwide access to the Internet by a different Internet access networks or, respectively, different Internet operators. A mobile, global utilization of the Internet becomes possible on the basis of this service of the mobile Internet.

25 EP 0 765 068 A2 discloses a method for payment of an Internet use, whereby the respective Internet can be used given a use of many and different Internet service providers after a request by the Internet and a transmission of the credit card number.

WO 97/41586 discloses a method for the connection of a user to the 30 Internet, whereby the user cannot directly access the internet but via a further Internet

service provider. To this end, specific logon and check procedures are provided at the further Internet service provider that represent the basis for the usage time and the charge registration.

WO 97/14118 discloses a computer network wherein the geographically 5 distributed computers access the Internet via a central server. The computers can communicate with the server via different communication networks, whereby a communication can be implemented after an authorization procedure and a payment for the use of the server.

The object underlying the invention is comprised in fashioning the 10 Internet access networks such that these can be used by arbitrary, mobile communication terminal devices. This object is achieved by the features of patent claim 1.

The critical aspect of the inventive method is to be seen therein that at 15 least one interface for cash-free payment for a use of the respective Internet access network is respectively provided in the Internet access networks. Within the framework of the log-on of a mobile communication terminal device in the respective Internet access network, a traffic relationship to the interface is set up and, following a cash-free payment via the interface effected by the communication terminal device, the respective Internet access network can be used by the mobile communication 20 terminal device.

The critical advantage of the inventive method is to be seen therein that an Internet communication terminal device can both be registered as well as implement a cash-free payment for the Internet access with the assistance of the interface. The registration at an Internet access network with the assistance of a mobile Internet 25 protocol additionally effects that an Internet user can be reached worldwide. A further advantage is the local realization of the interface in the Internet access network, since the information exchange with respect to the cash-free payment is limited to the Internet access network, i.e. does not ensue via the Internet itself, and, thus, a global communication of confidential information or, respectively, data transmitted given 30 cash-free payment is avoided.

The cash-free payment ensues especially advantageously with the assistance of a credit card - claim 3 - , whereby a credit card information and a personal identification information are communicated to the interface via the communication terminal device and via the Internet access network. Alternatively, 5 other cards or an input of the credit card information at an input means are also possible, a cash-free payment with the interface of the respective Internet access network being possible with the assistance thereof, whereby a read means - claim 4 - is to be adapted to the cards employed. Alternatively, a uniform input means - for example a numerical or alphanumerical keyboard - can be provided for the input of 10 the personal identification and the credit card information.

According to a further development of the inventive method, an electronic signature is communicated from the affected communication terminal device to the interface in the framework of a security system and/or the identification and credit card information to be communicated is encrypted individually associated to the 15 communication terminal devices - claim 5.

Further advantageous developments of the inventive method can be derived from the further claims.

The inventive method is explained in greater detail below with reference to a drawing.

20 The drawing shows a block circuit diagram of an arrangement of communication networks for which the inventive method is provided. The global Internet - indicated in the drawing by a dot-dash oval reference IN - is thereby connected to Internet servers IN-S, i.e. the access to the Internet IN is controlled via these devices. For example, two Internet servers IN-S are shown, whereby one 25 Internet server IN-S/F is connected to a communication fixed network KFN-indicated in the drawing by dot-dash oval referenced with KFN - and a further Internet server IN-S/M is connected to a communication radio network KMN - indicated by a dot-dash oval referenced KMN in the drawing. The communication fixed network KFN is realized, for example, by a service-integrating communication network ISDN or by 30 a telephone communication network FE. Communication fixed network-individual

communication terminal devices KE (KFN) are connected to this communication fixed network KFN via subscriber lines ASL.

The communication radio network KMN can, for example, be realized by an existing mobile radio telephone network GSM or by future mobile radio telephone networks UMTS according to a future UMTS standard for mobile radio telephone networks. Further communication radio networks KMN are fashioned, for example, according to a DECT or CDMA standard or a TD-CDMA standard - indicated by the designation RLL in the block circuit diagram. Mobile radio telephone network-individual communication terminal devices KE (KMN) are wirelessly connected to the communication network KMN.

It is assumed for the exemplary embodiment that the communication terminal devices KE (KFN), KE (KMN) connected to the communication fixed network KFN and to the communication radio network KMN are Internet-compatible, i.e. are equipped with the circuit-oriented and program-oriented means for a communication with the Internet IN. This means that the communication terminal devices KE represent a processor-controlled means - particularly a personal computer - that exhibits a picture screen means and a keyboard. It is also assumed that the communication terminal devices KE (KFN), KE (KMN) represent communication terminal devices KE that can be utilized at different geographical locations. This means that the communication terminal device KE (KFN) - particularly - a portable personal computer with an ISDN interface - can be connected to a communication fixed network KFN at different communication terminals KA. Of course, the inventive method can also be employed given a fixed connection of a communication terminal device KE (KFN) to a communication network KFN. A pre-requisite for the mobility of the communication terminal devices KE is a corresponding fashioning of the Internet IN, i.e. a mobile Internet protocol MIP is implemented in the Internet IN with whose assistance a service for the connection of mobile communication terminal devices KE is realized.

The inventive communication terminal devices KE (KFN) KE (KMN), further, are respectively equipped with an input means EE - shown by way of example in the communication terminal device KE for communication radio networks (KMN)

- or a reader means LE into which a credit card KK can be inserted - indicated by a dot-dash arrow. With the assistance of the input means EE, the credit card information ki stored in a credit card KK as well as the identification information id, i.e. the personal identification pin, can be input by an Internet user.

5 The communication fixed network KFN and the communication radio network KMN respectively form feeder networks AN for the Internet access network IN-AN or, respectively, the Internet IN.

After a wireless or wire-bound connection of a mobile communication terminal device KE (KFN, KMN), a log-on procedure is implemented in the 10 respective communication network KFN, KMN. Such a log-on procedure can, for example, be implemented with the corresponding communication terminal device identification - not shown - , whereby different identifications are employed for the communication fixed network KFN and the communication radio network KMN. Subsequently, a connection from the respective communication terminal device KE 15 (KFN, KMN) is setup to the allocated Internet server IN-S/F, IN-S/M. The setup of the connection and the log-on procedure are implemented in the communication terminal devices with the assistance of a signaling routine SR. After the connection setup, the respective communication terminal device KE (KFN, KMN) in the respective Internet server IN-S is connected to a interface SBB for cash-free payment.

20 The interface SBB is realized in software terms by an interface routine BB. As a result of a communication relationship between the reader means SE or input means EE or, respectively, the signaling routine SR of the requesting communication terminal devices KE and the commercial interface SBB, identification information id (pin) and credit card information ki are communicated to the interface SBB. After a 25 check of these communicated identification and credit card information id (pin), ki, the access to the Internet IN is enabled in the respective Internet server IN-S, i.e. the requesting communication terminal device KE can set up traffic relationships via the Internet to Internet-specific devices - not shown - or to other communication terminal devices KE.

30 The cash-free payment for an access to the Internet via the interface SBB can be provided both for a temporary use as well as for a longer or, respectively,

continuous use of the access to the Internet IN or, respectively, the respective Internet server IN-S.

The wire-bound communication terminal devices can be alternatively connected via transmission devices, whereby transmission methods are used that do 5 not influence the existing line technologies for, for example, the integrated services communication network ISDN or the analog telephone network FE. Such transmission technologies are the standardized ADSL and x DSL transmission methods. No connections to the respective Internet server need thereby be setup, since these communication terminal devices are directly connected to the respective 10 Internet server IN-S via the respective connection technology. A log-on or, respectively, registration in the respective Internet server IN-S continues to be required.

The inventive method is not limited to the exemplary embodiment since the inventive method can also be realized given the greatest variety of public or 15 private feeder networks AN to the respective Internet servers IN-S or, respectively, or, respectively, Internet access networks IN-AN. A respective adaptation in view of the signaling and the protocols employed must thereby be taken into consideration.

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